

REMARKS

Claims 1-38 are pending in this application. In the Office Action, the Examiner, first, repeated and made final an earlier Restriction Requirement and, as a result of this Restriction Requirement, withdrew Claims 11-16, 37 and 38 from consideration in this application. Also, the Examiner rejected Claims 1-4, 9, 17-20 and 30-36 under 35 U.S.C. §102 as being fully anticipated by U.S. Patent application publication no. 2003/0038035 A1 (Wilson). The Examiner objected to Claims 5-8, 10 and 21-29 as being dependent upon rejected base claims and indicated that these claims would be allowable if appropriately rewritten. The Examiner also noted that Claim 6 should be dependent from Claim 5, rather than Claim 4.

With respect to the Restriction Requirement, Applicants hereby affirm the election of Claims 1-10 and 17-36 for prosecution in this application.

Claim 6 is being amended, as suggested by the Examiner, to be dependent from Claim 5. In view of this change to Claim 5, the Examiner is requested to reconsider and to withdraw the objection to the dependency of Claim 6.

Also, independent Claims 1, 17 and 18 are being amended to better define the subject matters of these claims.

For the reasons discussed below, Applicants believe that Claims 1-10 and 17-36, as presented herewith, patentably distinguish over the prior art and are allowable. The Examiner is thus, requested to reconsider and to withdraw the rejection of Claims 1-4, 9, 17-20 and 30-36 under 35 U.S.C. §102 and the objection to Claims 5-8, 10 and 21-29, and to allow Claims 1-10 and 17-36.

More specifically, the present invention relates to electroplating and electroless plating apparatus and methods, in which a unique shell/material flow assembly is used to controllably adjust the amount of electric flux passing through that assembly and the distribution of the plating material on the workpiece. In particular, this shield/material flow assembly includes a multitude of adjustable openings, and the sizes of these openings are adjusted to achieve the desired control over the electric flux between the cathode and the anode and, in this way, the distribution of the plating material.

Wilson, et al. discloses a procedure for electrolytically processing microelectronic workpieces. In this procedure, conductive material is deposited on a workpiece by applying current to the workpiece through an electrolytic fluid. The distribution of the current in the electrolytic fluid may be actively changed to provide for different plating characteristics.

One important general difference between the present invention and the procedure shown in Wilson, et al. is that this invention is able to achieve the desired result while using a very simple flow control assembly, where, in contrast, Wilson, et al. discloses a complex mechanism for controlling the fluid flow. This difference is clearly apparent when comparing Figure 1 of the present application with Figure 3 of Wilson, et al. The former figure shows a very simple assembly, while the latter figure shows a comparatively complex mechanism.

This general difference between Wilson, et al. and the present invention is reflected in a number of more specific differences between Wilson, et al. and this invention. For example, with the present invention, the opening or openings of the flow control extend laterally across the anode or the workpiece. This is not the case with the

arrangement shown in Wilson, et al. Instead, with the mechanism shown in Wilson, et al, the openings of the flow control mechanism are above the workpiece and have a very limited extent.

This feature of the invention is of utility because it allows for a very simple flow control assembly while still achieving control of the electric flux across the entire workpiece.

Independent Claims 1, 17 and 18 are being amended herein to emphasize this feature of the invention. Specifically, Claim 1 and 17 are being amended to indicate that the multitude of adjustable openings of the shield/material flow assembly extend laterally across, respectively, the anode and the workpiece. Claim 18 is being amended to include the limitation that the adjustable opening of the shield/material flow assembly laterally extends across the workpiece.

Because of the above-discussed differences between Claims 1, 17 and 18 and the prior art, and because of the advantages associated with those differences, these claims patentably distinguish over the prior art and are allowable. Claims 2-10 and 22-36 are dependent from Claim 1 and are allowable therewith; and Claims 19-21 are dependent from, and are allowable with, Claim 18. Accordingly, the Examiner is respectfully requested to reconsider and to withdraw the rejection of Claims 1-4, 9, 17-20 and 30-36 and the objection to Claims 5-8, 10 and 21-29, and to allow Claims 1-10 and 17-36.

In view of the above-discussion, the Examiner is requested to reconsider and to withdraw the objection to the dependency of Claim 6. The Examiner is also respectfully requested to reconsider and to withdraw the rejection of Claims 1-4, 9, 17-20 and 30-36 under 35 U.S.C. §102, and the objection to Claims 5-8, 10 and 21-29, and to allow

Claims 1-10 and 17-36. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

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